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**National Aeronautics and Space Administration**

**FINAL TECHNICAL REPORT FOR NAG 5-3798**

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**The bright gamma-ray transient GRO J1838-014**  
**Multiwavelength studies of X-ray novae**

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We completed the observational work regarding the bright gamma-ray transient GRO J1838-014 that might be a representative of a new class of gamma-ray sources in our Galaxy [1]. A bright gamma-ray flare was detected by EGRET in June 1996. Its time variability ( $\sim$  weeks) and the absence of a clearly identified radio-loud ( $\sim 1$  Jy) blazar in its error box are crucial for our interpretation of GRO J1838-014 as an object different from gamma-ray blazars or isolated pulsars. We also observed the error box with ASCA and SAX pointings [2] without identifying obvious candidate counterparts. The X-ray flux in quiescence, if any, is quite low, and canonical X-ray binary systems are also excluded. GRO J1838-014 is not the only non-blazar gamma-ray transients detected by EGRET in the Galactic plane. An analysis of CGRO Cycle 4 data is being completed in collaboration with R. Mukherjee and J. Mattox with the discussion of other interesting unidentified sources [3]. Pulsars embedded in transient gaseous surroundings (maybe in binary systems) or compact objects in special systems are plausible candidates. A theoretical analysis is being developed [4].

We also continued the study of Galactic X-ray novae, in particular of systems producing radio jets such as GRS 1915+10. The use of Green Bank Interferometer data (of which the MT is the chair of the executive committee) has been of great use to GRO and other satellite missions. We completed a study of X-ray/radio outbursts of GRS 1915+10 with BSAX and Ryle radiotelescope data [5] and CGRO/BATSE simultaneous data.

We also continued our theoretical work on gamma-ray bursts [6,7].

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